

XII.—Statement of the principal circumstances respecting the united Siamese Twins now exhibiting in London. By GEORGE BUCKLEY BOLTON, Esq., Member of the Royal College of Surgeons, and of the Medical and Chirurgical Society of London. Communicated by the President.

Read April 1, 1830.

THE youths who are the subject of the following memoir, were born in May 1811 in the kingdom of Siam, at Maklong, a small village sixty miles distant from the capital, Bangkok. They are the offspring of Chinese parents, and have been named, the one CHANG, and the other ENG. Bangkok is situated on the river Minam, forty miles from its mouth, between the Burmese and Chinese empires, in latitude 13° north, and longitude 101° east. Siam is tributary to the latter empire.

The king of Siam soon heard of the birth of CHANG and ENG, and at first designed to have them put to death, conceiving them to be monsters, and imagining that the existence of such beings portended some evil to his kingdom. But afterwards hearing that they were harmless, and would probably be able to support themselves by labour, he allowed them to remain unmolested. Mr. ROBERT HUNTER, a British merchant resident at Siam six years ago, saw the twins for the first time in a fishing-boat on the river Minam. They were naked from the hips upwards, were very thin in their persons, and it being then dusk, he mistook them for some strange animal. Shortly afterwards he endeavoured to prevail on the Siamese government to allow them to visit England, but could not at that time succeed. However, in March 1829, Captain COFFIN and Mr. HUNTER conjointly obtained this permission for a certain period, having gained the ready acquiescence of their mother, on the condition of a provision being made for her during the absence of her sons.

The mother is stated by Captain COFFIN to be about five feet seven inches in height, well formed, with large hips, and, for her country, a strong woman,

though of lax fibre. She was thirty-five years of age when her twins were born, and had previously given birth to several other children, none of whom had any malformation. She declared to Captain COFFIN that she suffered less during her pregnancy with these than on any similar occasion, and also that her labour was not attended with the least difficulty. She further stated that the twins were born with the head of one between the legs of the other, and were rather small infants. All her other children, except these and two others, a brother and sister, are dead.

The united twins left Siam in the beginning of April 1829, with Captain COFFIN and Mr. HUNTER, on board the American ship *Sachem*, and arrived at Boston in the United States in the following August, where they remained eight weeks, during which period they excited the greatest interest among scientific and professional men.

They embarked at New York for England in the October following, and arrived in London on the evening of the 19th of November 1829. On the 24th of November an invitation was given to the most distinguished persons of the medical faculty in London, to view them at the Egyptian Hall, Piccadilly, and on the 26th of November I was desired to become their sole medical attendant.

These youths are both of the same height, namely, five feet two inches ; and their united weight is one hundred and eighty pounds. They are much shorter, and appear less advanced in puberty, than youths of this country at the age of eighteen years ; but the average stature of their countrymen is less than that of Europeans. Many of our ordinary twins bear a stronger resemblance to each other in countenance than is observed in these youths. Their bodies and limbs are well formed, but the spine of CHANG, who habitually holds his arm over the shoulder of ENG, is considerably curved laterally, an effect which is apparently the result of this long continued habit. They have not the broad and flat forehead so characteristic of the Chinese race, but resemble the lower class of the people of Canton in the colour of their skins, and in the forms of their noses, lips, eyes, and ears. The left eye of CHANG is weaker than the right ; but this is reversed in the case of ENG, so that each sees best with the eye nearest his brother. Their bodies are much paler now than they were on their first arrival in England. Their genital organs are,

like all their other external parts, regularly formed; but the youths are naturally modest, and evince a strong repugnance to any close investigation on this subject.

The band of union is formed in the following manner.—At the lowest part of the sternum of each boy, the ensiform cartilage is bent upwards and forwards, meeting the other in the middle of the upper part of the band, where moveable joints exist, which admit of vertical as well as lateral motion; each junction appearing to be connected by ligamentous structures. It is difficult to define precisely where the respective cartilages from each body meet, and whether a slip from one of the cartilages of the false ribs enters into the structure of these parts; but it is certain that the ensiform cartilages have assumed an extended and altered figure. This cartilaginous portion occupies the upper region of the band. The outline of the band is convex above, and arched below. Under the cartilage, while they stand in their ordinary posture, are large hernial sacs opening into each abdomen, and into which, on coughing, congenital herniæ are forced; probably, in each boy formed by a portion of the transverse arch of the colon: generally, however, and under ordinary circumstances, these herniæ are not apparent. Whether there is a communication between the two abdominal cavities, or a distinct peritoneal sac belonging to each hernia, is by no means obvious; and this is a point of vital importance, if ever, by their mutual desire, a surgical separation should be contemplated. If, however, any such operation hereafter be strongly requested by both the youths, when arrived at years of discretion, and after they have been fully apprised of its danger, it will be essential that some preliminary steps be taken to provide against the exposure of either or both of the abdominal cavities.

When these herniæ protrude, their respective contents are pushed forwards as far as the middle of the band. The entire band is covered with common integument; and when the boys face each other, its length at the upper edge is one inch and three quarters, and at the lower, not quite three inches. From above downwards, it is three inches and a quarter, and its greatest thickness is one inch and five-eighths. In the centre of the lower part of this band, which presents a thin edge, formed only by skin and cellular substance, there is the cicatrix of a single navel, showing where the umbilical cords or cord had

entered, and which I have no doubt contained two sets of vessels*. Small blood-vessels and nerves must of course traverse the substance of the band, but no pulsation can be detected in it.

Captain COFFIN and Mr. HUNTER were informed by the mother of the twins, that soon after their birth, and during the period of infancy, this band was much larger in proportion to the size of their bodies than it is at the present time: it had then no hard cartilaginous feel at its upper margin; it was also larger in circumference, and the bodies of the twins were nearer in contact; but from continued stretching it has become elongated, and its circumference has diminished. In their own country they were employed to row a boat, for which purpose both stood at the stern, each using a one-handed oar, an exercise which must have assisted greatly in stretching the band. It is now remarkably strong, and possesses little sensibility; for they have been formerly pulled by a rope fastened to it, without complaining of pain, or expressing any uneasiness. In the month of February last one of them fell out of bed while asleep, and hung by the band for some time, and when both awoke, they alike stated, that they experienced no pain in the band from this accident. Mr. HALE, their constant attendant, has lifted one of them from the ground, allowing the other to hang by the band with his feet raised from the floor; yet the whole weight of one of the boys thus suspended did not occasion pain to either, or even excite their displeasure. The circumstance of the small degree of sensibility possessed by the band, tends to corroborate the opinion I entertain of the possibility of effecting a separation of the twins by a surgical operation.

* It has been asserted, that "these twins are the produce of a single ovum, and grew upon one placenta, by one umbilical cord;" but of this there does not appear to be any evidence. By permission of the Board of Curators, I have had an opportunity of examining a preparation of united female twins, now in the museum of the Royal College of Surgeons in London. The union extends from the lower part of the sternum of each twin to the navel; and there is one umbilical cord common to both. On dissection, the following appearances were observed.—The umbilical vein in its course towards the twins, is divided into two nearly equal sized branches, the division taking place at about one inch and three quarters from the umbilicus; one branch passing upwards in front to the porta of the anterior liver, and the other behind to its proper liver. The number of arteries are four, two from each foetus, and are included in the same theca with the umbilical vein as far as the body, retaining the appearance of an ordinary funis.

To the ordinary touch there is not any middle line where the sense of feeling common to both the boys terminates ; but it is difficult to ascertain the precise point where the inosculation of the one individual with the other takes place : and this is not discoverable by making punctures with a needle, for each boy shrinks from a puncture whenever it is made in any part of a vertical line drawn down the middle of the band. It is therefore obvious, that the nerves of the common skin covering the band maintain a sensitive communication with each of the two youths ; and it is reasonable to infer, that a similar communication subsists between the small arteries and veins, which mutually nourish the middle portion of the band. If, however, slight punctures be made at the distance of half an inch from the centre of the band, then the sensation is only felt by the individual belonging to the side punctured.

From these evidences it may be concluded, that the united twins would be subject to certain distempers in common, although each possesses a distinct existence, and even different constitutional peculiarities.

On the suggestion of Doctor ROGET, a silver teaspoon was placed on the tongue of one of the twins, and a disk of zinc on the tongue of his brother : when the metals thus placed were brought into contact, the youths both cried out “ Sour, sour.” This experiment was repeated several times with the same result, and was reversed by exchanging the positions of the metals, when a similar effect was produced.

These experiments prove that the galvanic influence passes from one individual to the other, through the band which connects their bodies, and thus establishes a galvanic circuit with the metals when these are brought into contact.

They habitually face in one direction, and place themselves side by side, ENG to the right and CHANG on the left, but are able to turn and remain in the opposite position. They always walk in the posture first described, although there is no other reason for this than established habit, as they are physically able to move in a reverse direction. Their united strength is great, for they can with perfect ease throw down a powerful man. At Philadelphia they also carried without inconvenience a person weighing rather more than twenty stone for a considerable distance. Their activity is remarkable ; they run with great swiftness, and elude pursuit so admirably, that in sportive exercises they can

with great difficulty be caught by a single person. They have each the power to bend their bodies in all directions, and turn their heels over their shoulders. They also often playfully tumble head over heels while on their bed, without occasioning the slightest pain or inconvenience in the band. The same degree of personal dexterity is evinced by each youth when playing at battledore and shuttlecock ; and in all the bodily actions common to both, such as running and jumping, a remarkable consent or agreement is displayed without any apparent conference. These concurrences appear to be the necessary result of long continued and extraordinary intimacy.

In their respective physical constitutions, however, several differences occur. The boy on the left, CHANG, possesses the more vigorous bodily health of the two ; but their intellectual abilities appear equal, for they are alike proficient in the games of chess and draughts, although they object to compete with each other. In the game of whist, however, they rather prefer not to be partners.

The tongue of ENG is at all times whiter than that of CHANG, and his digestion is more easily deranged by unsuitable diet. I have never heard that CHANG has passed a single day without alimentary discharges, but the contrary has often occurred to ENG. In general they both obey the calls of nature at the same time, and this happens even when these result from the operation of medicines.

It having occurred to me, that the odour given by asparagus to the urine would be a test of the extent of the circulation of the blood through both the twins, on the 22nd of March I gave that vegetable to CHANG with his dinner, not allowing any to be given to his brother. On examining their urine four hours after this meal, that of CHANG had distinctly the peculiar asparagus smell, but the urine of his brother was not influenced by it. The next day this experiment was reversed, and therefore with reversed results. These trials sufficiently prove a fact which was otherwise apparent,—that the sanguineous communication between the united twins is very limited.

On the 9th of December they were both attacked with bronchial catarrhs, became pale and languid, coughed severely, and complained of pain in their throats ; each of them had also slight pains during strong inspirations. Their skins were dry and cold, respirations hurried, pulses ninety beats in a minute, rather hard and small ; the tongue of ENG was glazed and pallid as

usual, CHANG's became furred and dry. The bowels of both had been naturally relieved the day previous, and each was directed to take such medicines as experience had shown to be proper in the malady now common to both. Under this discipline and suitable diet, together with the additional clothing of leather waistcoats, and a leather coverlet for their bed, then considered to be required on account of the inclement winter, they both regained their ordinary state of health.

These incidents are recorded merely to show that they have been treated as two distinct persons, although from the very unusual circumstance of their conjunction, the same causes of disorder are presented to both, and similar consequences have thence ensued.

They have had the measles, and at eight years of age the confluent small-pox, distinct marks of the latter disease being still visible on their faces. When they were attacked with variola, a brother and two sisters had also that malady so severely as to occasion their deaths. While lying on their backs in bed, during their late illness, I counted the pulse of ENG in this position; it was sixty-three, soft and regular. I then went round the bed to examine CHANG, but in the mean time both had had occasion to move, and returned immediately to their former position. Although these movements were effected quietly, and did not occupy half a minute, producing no coughing, yet on counting CHANG's pulse, it was eighty, and soft. I then again counted ENG's, which was also eighty, soft and regular. After a lapse of ten minutes, both having remained perfectly still, on counting their pulses I found them at seventy-two.

I have submitted these occurrences in order to show the reciprocity of their symptoms under similar conditions of disorder.

In a healthy state, their ordinary pulses are generally alike, but CHANG's is the strongest; they are both easily excited, and when in one the pulse has been, from this cause, raised to ninety, that of the more passive brother has remained at seventy-two. They always take their meals together, objecting to be seen while thus engaged. Neither will eat or drink what the other dislikes, though they occasionally take different sorts of food at the same time, such as meat or fish. When the appetite of the one is satiated, the other is also satisfied. In their habits they are very cleanly and delicate, and mutually assist each other in

dressings. They are exceedingly affectionate and docile, and grateful for every kindness shown them. It is not often that they converse with each other, although their dispositions and tempers agree, and their tastes and opinions are similar. Sometimes they engage in distinct conversations with different persons at the same time, upon totally dissimilar subjects. Both are very fond of music, and are equally interested in dramatic performances.

It does not appear that they have ever had any serious quarrel, except on one occasion, which occurred, as their mother reported, when they were eight years of age. While on their passage to America, one of them wished to bathe, as was their custom, to which the other objected, the day being cold ; a slight dissension ensued, but Captain COFFIN soon reconciled the difference.

They always fall asleep at the same moment, and it is impossible to wake one without also arousing the other. When they were at Boston, Doctor SKEY, Surgeon General to the British Army, entered their bed-room at midnight on three successive nights when both were asleep : on each occasion he touched one and was answered by the other, both awaking at the same instant, inquiring why they were disturbed.

The experiment has also been repeated in this country, and with the same result. On my tickling one of them, the other told me to desist, though he stated that he did not feel the touch, and it was quite clear that he could not see me tickle his brother.

On their voyage to England one of them had the tooth-ache, during three days and nights, and suffered great pain, with loss of sleep, which last evil was shared by his brother, both remaining awake. On the 16th of December Mr. HALE went into their bed-room when they were asleep. ENG was restless, and tossing about in bed, while CHANG was screaming. He awoke them, and on inquiring what ailed them, ENG replied that he was dreaming about his mother, and CHANG said that a man was cutting off the long hair from his head. These different dreams appear to have occurred simultaneously.

The preceding instances of their mutual consent in many physical and moral particulars, may be accounted for by their constant moral and physical intimacy, which unquestionably is the source of more impressions common to both, than ever happen to two distinct individuals. They are at present very much attached to each other, but judging from what is now become a very

common subject of discourse between them, it is not an unreasonable conjecture, that some female attachment, at a future period, may occur to destroy their harmony, and induce a mutual and paramount wish to be separated.

They are remarkably quick in intellect, and possess great imitative powers. They also observe very minutely whatever is presented to them, and comment upon the subject to their friends. On the 29th of November, a gentleman visited them with me, and recommended Captain COFFIN to have them taught their letters, and to write. By way of experiment he marked with a pencil, on a card, a large A; he then pronounced the letter, which sound the boys exactly imitated. He afterwards formed a B and a C; but while doing this, CHANG interrupted him, wishing to obtain the pencil; and both not only repeated the sounds of the three letters, but imitated their forms, CHANG even making a pun on the letter C; for on being asked if he knew its form and pronunciation, he replied, laughing, "Yes, I *see* you."

A person who had lost an eye, visiting them at their exhibition-room in New York, they inquired of their attendant what he had paid for his admission; and on being informed that it was the same as other persons, they remarked that half of it should be returned, as he had not had the same advantage as the others.

These extraordinary individuals are the most remarkable instances on record of perfect and distinctly formed human beings united together, who have attained the age of puberty in a state of sound bodily health: hence an authentic account of their moral and physical habitudes will probably be deemed valuable*.

On concluding this report, I wish it to be known, that I have neither instituted, nor permitted to be made, any unjustifiable experiments upon these youths; considering myself bound, by professional responsibility, as well as by a sense of national justice, to resist all such improper proposals. For these reasons, and also because I am averse to the administration of mercury, unless it be imperatively demanded, I have not had an opportunity of knowing whether the mercurial influence would pervade the one youth, if applied

* There is a case of a double female monster, born at Szony in Hungary, October 26th, 1701, who died February 23rd, 1723, at Presburg, in the convent of the Nuns of St. Ursula, recorded in the Philosophical Transactions for 1757, page 311, by JUSTUS JOANNES TORKOS, M.D. F.R.S.

exclusively to the other. As, however, the capillary blood-vessels of each unquestionably inosculate with those of his companion in the uniting band, it must be obvious, that certain constitutional diseases, and many diffusible medicinal substances, would, partially at least, pervade both the united twins, though only one of them were exposed to their influences.

In addressing these particulars and observations to the Royal Society, I have intentionally confined myself to a narration of facts, and have abstained from discussions of a speculative or hypothetical character.

I cannot here deny myself the pleasure of stating the kindness which has at all times been evinced towards these youths by Captain COFFIN, Mr. HUNTER, and Mr. HALE : the unwearied anxiety manifested by these gentlemen for their welfare and happiness, and the liberal manner in which they have uniformly afforded the means of investigating so curious an object of philosophical inquiry, entitle them equally to the thanks of the philanthropist and the lover of science.

*3 King Street, St. James's Square,
March 29th, 1830.*

The Plate exhibits two reduced views of the uniting band ; also a representation of a section of the fac simile in wax.

Fig. 1. represents the front view of the ordinary standing attitude of the youths.

Fig. 2. exhibits the opposite side ; or what may be termed the ordinary back view.

Fig. 3. represents a section through the middle of the band in its relaxed or unstretched state.

Fig. 2.

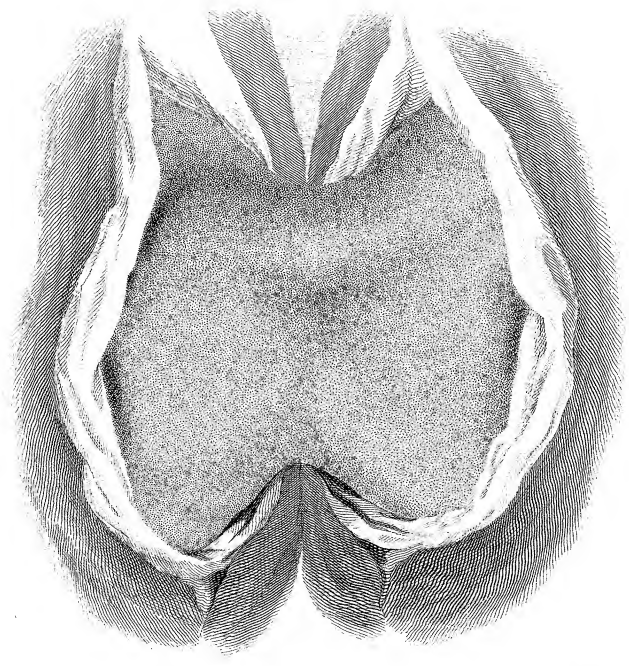


Fig. 3.

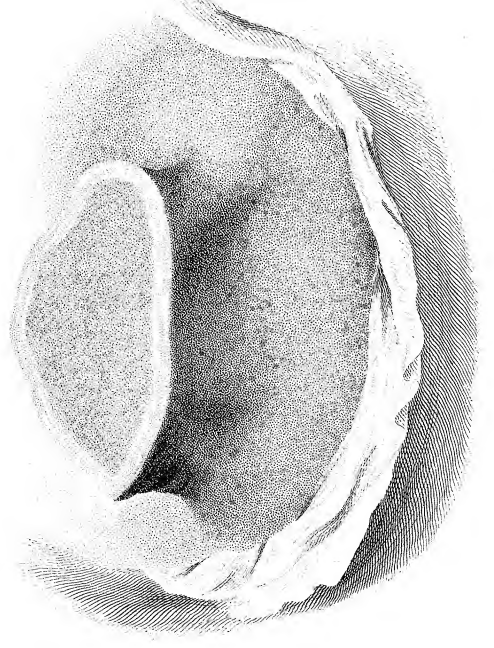


Fig. 1.

